Novel Rejuvenated T Cell Immunotherapy for Lung Cancer

Grant Award Details

Novel Rejuvenated T Cell Immunotherapy for Lung Cancer

Grant Type: Quest - Discovery Stage Research Projects

Grant Number: DISC2-08874

Project Objective: A cellular immunotherapy approach (candidate) that targets non-small cell lung carcinoma (NSCLC) with EGFR mutations, and colorectal cancer (CRC) with KRAS mutations.

Investigator:

Name:	Hiromitsu Nakauchi
Institution:	Stanford University
Type:	PI

Disease Focus: Cancer, Lung Cancer, Solid Tumors

Human Stem Cell Use: iPS Cell

Cell Line Generation: iPS Cell

Award Value: $1,968,456

Status: Active

Grant Application Details

Application Title: Novel Rejuvenated T Cell Immunotherapy for Lung Cancer

Public Abstract:

Research Objective

Through this project, we would like to evaluate how this T-iPSC-based immunotherapy that we have developed can eliminate lung cancer cells effectively in vivo using xenografted SCID mice.

Impact

This novel T-iPSC-based immunotherapy will provide another effective treatment for lung cancer and possible other malignancies by supplying unlimited number of young and active CTLs.

Major Proposed Activities

- Peptides synthesis for EGFR mutation hot spots and selection of the peptides with affinity binding assay
- Patient lung cancer/ blood cell culture and xenograft establishment in SCID mice for establishing tumor model
- Peptide responsive T cell selection, IPS induction and T cell redifferentiation and expansion (rejCTL) for cell-based immunotherapy
- transfusion of patient specific rejCTL cells into lung cancer grafted mice to treat tumors
- Evaluation of the efficacy of rejCTL cell therapy by observing tumor sizes in xenografted mice
- Statistical analysis and conclusion for this novel cell-based cancer treatment and contact FDA for initiation of a clinical trial

Statement of Benefit to California:

Lung cancer is known to cause the highest fatality rate. California State and citizens suffer similarly as the US and worldwide do. A fairly common HLA allele, e.g. HLA A0201 presents in up to 50% of California populations. Thus, we can provide an 'off the shelf' therapy for most of cancer patients. As a California based institute, we will succeed this research and pioneer this frontier cell- based immunotherapy, and conduct a possible clinical trial through CIRM funding.

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